STATE OF MISSOURI

# DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

# MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

| | |
|---|---|
| Permit No.: | MO-0089940 |
| Owner: | City Utilities of Springfield |
| Address: | 301 East Central, PO Box 551, Springfield, MO 65801 |
| Continuing Authority: | Same as above |
| Address: | Same as above |
| Facility Name: | Springfield Southwest Power Plant |
| Address: | Haseltine Road at Walnut Lawn, Springfield, MO 65619 |
| Legal Description: | See page 2 |
| Receiving Stream: | Unnamed Tributary to Wilson Creek (U) |
| First Classified Stream and ID: | Wilson Creek (P)(04931) 303(d)list |
| USGS Basin & Sub-watershed No.: | (11010002-020001) |

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

## FACILITY DESCRIPTION

See page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

February 6, 2004
Effective Date

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

February 5, 2009
Expiration Date

Jim Hull, Director of Staff, Clean Water Commission

FACILITY DESCRIPTION (continued)

Outfall #001 - Power Plant - SIC #4931
Settling basin/stormwater/coal and limestone storage areas.
Design flow is 24.3 MGD.
Actual flow is 0.23 MGD.
Legal Description: SE ¼, SW ¼, NE ¼, Sec. 12, T28N, R23W, Greene County

Outfall #002 - Power Plant - SIC #4931
Ash transport/cooling water/boiler blowdown/stormwater.
Design flow is 9.6 MGD.
Actual flow is 0.53 MGD.
Legal Description: NW ¼, SW ¼, SE ¼, Sec. 7, T28N, R22W, Greene County

Outfall #003 - Eliminated

Outfall #004 - Power Plant - SIC #4931
Settling basin/stormwater/landfill.
Design flow is 11.7 MGD.
Actual flow is 0.11 MGD.
Legal Description: NW ¼, NE ¼, SW ¼, Sec. 7, T28N, R22W, Greene County

Outfall #005 - Power Plant - SIC #4931
Stormwater runoff from plant area including fly ash compaction area.
Actual flow is dependent upon precipitation.
Design flow is 3.7 cfs.
Legal Description: NE ¼, SW ¼, Sec. 7, T28N, R22W, Greene County

Outfall #006 - Power Plant - SIC #4931
Stormwater runoff.
Actual flow is dependent upon precipitation.
Design flow is 4.8 cfs.
Legal Description: NW ¼, NW ¼, NW ¼, Sec. 7, T28N, R22W, Greene County

## A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS



The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

| OUTFALL NUMBER AND EFFLUENT PARAMETER(S) | UNITS | FINAL EFFLUENT LIMITATIONS | | | MONITORING REQUIREMENTS | |
|---|---|---|---|---|---|---|
| | | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MEASUREMENT FREQUENCY | SAMPLE TYPE |
| Outfall #001 | | | | | | |
| Flow | MGD | * | | * | once/month | 24 hr. estimate |
| Phosphorus as P | mg/L | * | | * | once/month | grab |
| Total Suspended Solids | mg/L | 50 | | * | once/month | grab |
| pH - Units | SU | ** | | ** | once/month | grab |
| Outfall #002 | | | | | | |
| Flow | MGD | * | | * | once/month | 24 hr. estimate |
| Phosphorus as P | mg/L | * | | * | once/month | grab |
| Total Suspended Solids | mg/L | 100 | | 30 | once/month | grab |
| Oil & Grease | mg/L | 20 | | 15 | once/month | grab |
| Temperature | °F | 90 | | | once/month | grab |
| pH - Units | SU | ** | | ** | once/month | grab |
| Biochemical Oxygen Demand$_5$ | mg/L | * | | * | once/month | grab |
| Sulfates | mg/L | * | | * | once/month | grab |
| Total Residual Chlorine & Bromine*** | mg/L | 0.2 | | 0.2 | once/month | grab |
| Copper, Total Recoverable | mg/L | * | | * | once/month | grab |
| MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE March 28, 2004. | | | | | | |
| Whole Effluent Toxicity (WET) Test | % Survival | See Special Conditions | | | once/year in May | 24 hr. composite |
| MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE October 28, 2004. | | | | | | |
| Outfall #004 | | | | | | |
| Flow | cfs | * | | * | once/month | instantaneous estimate |
| Rainfall | inches | * | | * | once/month | 24 hr. total |
| Phosphorus as P | mg/L | * | | * | once/month | grab |
| Total Suspended Solids | mg/L | 100 | | 30 | once/month | grab |
| pH – Units | SU | ** | | ** | once/month | grab |
| MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE March 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS. | | | | | | |

## B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

PERMIT NUMBER MO-0089940

## A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

| OUTFALL NUMBER AND EFFLUENT PARAMETER(S) | UNITS | FINAL EFFLUENT LIMITATIONS | | | | |
|---|---|---|---|---|---|---|
| | | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MEASUREMENT FREQUENCY | SAMPLE TYPE |
| Outfall #005 | | | | | | |
| Flow | cfs | * | | * | once/quarter**** | instantaneous estimate |
| Rainfall | inches | * | | * | once/quarter**** | 24 hr. total |
| Phosphorus as P | mg/L | * | | * | once/quarter**** | grab |
| Total Suspended Solids | mg/L | 100 | | 30 | once/quarter**** | grab |
| pH - Units | SU | ** | | ** | once/quarter**** | grab |
| PCP | mg/L | * | | * | once/quarter**** | grab |
| Oil & Grease | mg/L | 15 | | 10 | once/quarter**** | grab |
| Outfall #006 | | | | | | |
| Flow | cfs | * | | * | once/quarter**** | instantaneous estimate |
| Rainfall | inches | * | | * | once/quarter**** | 24 hr. estimate |
| Phosphorus as P | mg/L | * | | * | once/quarter**** | grab |
| Total Suspended Solids | mg/L | 100 | | 30 | once/quarter**** | grab |
| pH - Units | SU | ** | | ** | once/quarter**** | grab |
| Oil & Grease | mg/L | 15 | | 10 | once/quarter**** | grab |

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE April 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

## B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.
** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
*** Total Residual Chlorine and Bromine sample must be taken during actual discharge event that occurs during or after use of these chemicals. The discharge monitoring report should contain a complete report on Biocide use. In addition, at least twice during the first year following permit reissuance, permittee shall monitor for Total Residual Chlorine and Bromine at a point 100 feet beyond the outfall location at times when Biocide use is occurring. Results shall be submitted to the Department within 30 days following each sample date. The standard test for Total Residual Chlorine also measured Total Residual Bromine and will be reported as Total Residual Chlorine.
**** Sample once per quarter in the months of March, June, September, and December.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. Report as no-discharge when a discharge does not occur during the report period.

3. All outfalls must be clearly marked in the field.

4. Outfall #005 shall be monitored instream below the fly ash basins, the landfill roads and the pole storage area immediately upstream of Outfall #002.

5. Outfall #006 shall be monitored at the discharge from the aesthetic pond on the north side of the power plant.

6. City Utilities of Springfield should be aware that a phosphorus limit may be added to this permit at a future date.

7. There shall be no discharge of polychlorinated biphenyl (PCB) compounds.

8. Whole Effluent Toxicity (WET) tests will be conducted as follows:

| SUMMARY OF WET TESTING FOR THIS PERMIT | | | | |
|---|---|---|---|---|
| OUTFALL | A.E.C. % | FREQUENCY | SAMPLE TYPE | MONTH |
| #002 | 100% | Annually | 24 hr. composite | May |

   (a) Test Schedule and Follow-Up Requirements

      (1) Perform a single-dilution test in the months and at the frequency specified above. If the effluent passes the test, do not repeat the test until the next test period.
      Submit test results along with complete copies of the test reports as received from the laboratory within 30 calendar days of availability to the WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102.

      (2) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days , and biweekly thereafter, until one of the following conditions are met:

         (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
         (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

C. SPECIAL CONDITIONS (continued)

8. Whole Effluent Toxicity (WET)(continued)

(a) Test Schedule and Follow-Up Requirements (continued)

(3) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

(4) Additionally, the following shall apply upon failure of the third test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permitee shall contact WPCP, Planning Section to ascertain as to whether a TIE or TRE is appropriate . The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPCP within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

(5) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(6) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

(7) All failing test results shall be reported to WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102within 14 calendar days of the availability of the results.

(8) When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

(9) Submit a concise summary of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.

(2) To pass a multiple-dilution test:

(a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the $LC_{50}$ concentration for the most sensitive of the test organisms; or,
(b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

C. SPECIAL CONDITIONS (continued)

8. Whole Effluent Toxicity (WET)(continued)

(c) Test Conditions

(1) Test Type: Acute Static non-renewal

(2) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.

(3) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.

(4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.

(5) Single-dilution tests will be run with:
(a) Effluent at the AEC concentration;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(6) Multiple-dilution tests will be run with:
(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

**SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS**

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR,the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

| | |
|---|---|
| Test duration: | 48 h |
| Temperature: | 25 ± 1°C Temperatures shall not deviate by more than 3°C during the test. |
| Light Quality: | Ambient laboratory illumination |
| Photoperiod: | 16 h light, 8 h dark |
| Size of test vessel: | 30 mL (minimum) |
| Volume of test solution: | 15 mL (minimum) |
| Age of test organisms: | <24 h old |
| No. of animals/test vessel: | 5 |
| No. of replicates/concentration: | 4 |
| No. of organisms/concentration: | 20 (minimum) |
| Feeding regime: | None (feed prior to test) |
| Aeration: | None |
| Dilution water: | Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness. |
| Endpoint: | Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at p≤ 0.05) |
| Test acceptability criterion: | 90% or greater survival in controls |

Test conditions for (Pimephales promelas):

| | |
|---|---|
| Test duration: | 48 h |
| Temperature: | 25 ± 1°C Temperatures shall not deviate by more than 3°C during the test. |
| Light Quality: | Ambient laboratory illumination |
| Photoperiod: | 16 h light/ 8 h dark |
| Size of test vessel: | 250 mL (minimum) |
| Volume of test solution: | 200 mL (minimum) |
| Age of test organisms: | 1-14 days (all same age) |
| No. of animals/test vessel: | 10 |
| No. of replicates/concentration: | 4 (minimum) single dilution method<br>2 (minimum) multiple dilution method |
| No. of organisms/concentration: | 40 (minimum) single dilution method<br>20 (minimum) multiple dilution method |
| Feeding regime: | None (feed prior to test) |
| Aeration: | None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min. |
| Dilution water: | Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness. |
| Endpoint: | Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at p≤ 0.05) |
| Test Acceptability criterion: | 90% or greater survival in controls |